

AMENDMENTS TO THE DRAWINGS

Figures 2 and 3 have been amended to eliminate any potential confusion for the various encircled directions "A".

REMARKS

Applicant requests favorable reconsideration of this application in view of the foregoing amendments and the following remarks. Claims 1-13 were pending in the application and were rejected in the Office Action. By way of this amendment, Applicant has: (a) amended claims 1, 4, 5, and 10-13; and (b) added new claim 14. Accordingly, claims 1-14 remain pending for further consideration.

1. Objection to Claims 11 and 13

The Examiner objected to claims 11 and 13 for various formalistic reasons, each of which has been fully obviated by way of the amendments made herein to claims 11 and 13. Accordingly, a withdrawal of this objection is both warranted and respectfully requested.

2. Rejections of Claims 1-13

Under 35 U.S.C. § 102(e) the Examiner rejected claims 1 and 4-6 as allegedly being anticipated by U.S. Patent No. 6,318,077 ("Claypole"). Further, under 35 U.S.C. § 103(a), the Examiner rejected: (a) claim 2 as allegedly being obvious when considering Claypole in view of U.S. Patent No. 6,272,850 ("Grant"); (b) claim 3 as allegedly being obvious when considering Claypole in view of U.S. Patent No. 6,266,957 ("Nozawa"); (c) claim 7 as allegedly being obvious when considering Claypole in view of U.S. Patent No. 5,983,628 ("Barroni-Bird"); (d) claims 8 and 9 as allegedly being obvious when considering Claypole in view of U.S. Patent No. 6,739,579 ("Rim"); (d) claim 10 as allegedly being obvious when considering Claypole in view of U.S. Patent No. 3,223,150 ("Tramontini"); and (e) claims 11-13 as allegedly being obvious when considering Claypole in view of U.S. Patent No. 6,151,891 ("Bennett"). For at least the following reasons, Applicant respectfully traverses each of these rejections.

As amended herein, claim 1 (*i.e.*, the claim from which claims 2-13 depend) recites an exhaust-heat recovery system for a vehicle. This system includes, among other possible things (*italic and underline emphasis added*):

- a catalytic converter configured to let pass exhaust discharged from an engine
and to burn catalytically combustible components in the exhaust;
- an exhaust heat exchanger configured to exchange heat between the exhaust
having passed through the catalytic converter and a heat-transfer
medium having passed through the engine;
- an air conditioner with a heat exchanger configured to generate a heating wind
by means of the heat exchange between the heat-transfer medium

having passed through the exhaust heat exchanger and an air conditioning wind; and
an engine controller configured to perform an incremental control for increasing the combustible components in the exhaust to be burned in the catalytic converter by means of changing an operation condition of the engine when a prescribed heating condition is unsatisfied.

As hereafter explained, Claypole, Grant, Nozawa, Barroni-Bird, Rim, Tramontini, and/or Bennett (standing alone or combined) fail to teach or suggest such a system.

In rejecting claim 1, the Examiner asserts that Claypole teaches “an engine controller for performing incremental control of the combustible components in the exhaust to be burned in the catalytic converter when the prescribed condition for heating is not satisfied (Fig. 1, No. 80; Col. 4, lines 42-54).” See Office Action at p. 3. Applicant respectfully disagrees. Claypole teaches that when a prescribed condition for heating is unsatisfied:

the controller 80 powers the fuel-fired heater 32 to add heat to the exhaust stream in block 126. The controller 80 then powers the exhaust gas heat recovery unit 38 in block 128 [] to capture the heat generated by the fuel-fired heater 32 and distribute it to the heat-requiring areas.

Claypole at col. 5, lines 6-13. In contrast, claim 1 recites “increasing the combustible components in the exhaust” to address an unsatisfied heating condition. This novel aspect of the present invention is discussed in, e.g., the application paragraph that begins on page 13, line 24 and ends on page 14, line 4; this paragraph teaches incremental control by increasing unburned hydrocarbons (i.e., combustible components) in the exhaust. In other words, whereas claim 1 recites addressing an unsatisfied heating condition by “increasing the combustible components in the exhaust,” Claypole addresses such a condition by increasing the heat of the exhaust stream by using a fuel-fired heater 32. Accordingly, Claypole fails to teach or suggest at least the above-italicized limitations of claim 1. Moreover, as hereafter explained Grant, Nozawa, Barroni-Bird, Rim, Tramontini, and Bennett all fail to cure this deficiency of Claypole.

Grant: Grant teaches adjusting an air/fuel ratio *input* into a combustion chamber 30 to change the temperature of a catalytic converter 20. Grant fails to teach or suggest adjusting the combustible components in the exhaust in the catalytic converter 20. Accordingly, Grant can not be used to cure the aforementioned deficiencies of Claypole.

Nozawa: Nozawa teaches adjusting the amount of unburned fuel entering an exhaust pipe 3, which is positioned upstream of two catalytic converters 13, 14. The hydrocarbons in the exhaust are burned in the exhaust pipe 3 to: (a) heat the exhaust before entering the catalytic converters 13, 14; and (b) ensure that the amount of hydrocarbons (i.e., combustible

components) is “very small.” *See* Nozawa at col. 5, line 40 – col. 6, line 5. Accordingly, although Nozawa teaches adjusting the combustible components of an exhaust gas, Nozawa fails to teach or suggest increasing the combustible components in the exhaust to be burned “in the catalytic converter,” as above-underlined in claim 1. Moreover, Nozawa teaches away from increasing the combustible components in the exhaust to be burned “in the catalytic converter” by teaching that the amount of hydrocarbons fed to the two catalytic converters 13, 14 is “very small.” Accordingly, Nozawa, like Grant, can not be used to cure the aforementioned deficiencies of Claypole.

Barroni-Bird: Barroni-Bird teaches cooling exhaust emissions via a fan 40 powered heat exchanger 20, which is provided upstream of a catalytic converter 26. *See* Barroni-Bird at col. 2, lines 6-39. Barroni-Bird fails to teach or suggest increasing the combustible components in the exhaust to be burned in the catalytic converter 26 and, therefore, Barroni-Bird, like Grant and Nozawa, can not be used to cure the aforementioned deficiencies of Claypole.

Rim: Rim teaches an exhaust valve for a combustion engine. Rim fails, however, to teach or suggest increasing the combustible components in the exhaust to be burned in a catalytic converter. Accordingly, Rim, like Grant, Nozawa, and Barroni-Bird, can not be used to cure the aforementioned deficiencies of Claypole.

Tramontini and Bennett: Tramontini and Bennett teach heat exchangers for a combustion engine. Tramontini and Bennett fail, however, to teach or suggest increasing the combustible components in the exhaust to be burned in a catalytic converter. Accordingly, Tramontini and Bennett, like Grant, Nozawa, Barroni-Bird, and Rim, can not be used to cure the aforementioned deficiencies of Claypole.

In light of the foregoing, it is clear that none of Claypole, Grant, Nozawa, Barroni-Bird, Rim, Tramontini, and Bennett teaches or suggests at least the above-italicized limitations of claim 1. Accordingly, Claypole, Grant, Nozawa, Barroni-Bird, Rim, Tramontini, and Bennett can not be used to reject claim 1, or any claim dependent thereon, under 35 U.S.C. §§ 102(e), 103(a). Moreover, as claims 2-13 depend from claim 1, each of these dependent claims is also allowable over Claypole, Grant, Nozawa, Barroni-Bird, Rim, Tramontini, and Bennett, without regard to the other patentable limitations recited therein. Accordingly, a withdrawal of the various rejections of claims 1-13 under 35 U.S.C. §§ 102(e), 103(a) is both warranted and earnestly solicited.

3. New Claim 14

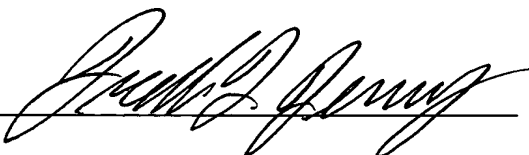
New claim 14 depends from claim 1. New claim 14 is, therefore, allowable for at least the same reasons as claim 1, without regard to the other patentable limitations recited therein.

CONCLUSION

For the aforementioned reasons, claims 1-14 are now in condition for allowance. A Notice of Allowance at an early date is respectfully requested. The Examiner is invited to contact the undersigned if such communication would expedite the prosecution of the application.

Respectfully submitted,

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